



## **GOLDILUX M P SERIES ULTRAVIOLET PROBES**

**MODELS**  
**GAP-1**  
**GBP-1**  
**GCP-1**

### **USER MANUAL**

#### **GENERAL DESCRIPTION OPERATING INSTRUCTIONS MAINTENANCE AND PRECAUTIONS CALIBRATION SPECIFICATIONS WARRANTY INFORMATION**

#### **GENERAL DESCRIPTION**

The GOLDILUX MP series of ultraviolet probes must be used in conjunction with a GOLDILUX MP series readout unit GRP-1. The probes measure ultraviolet radiation in units of  $\mu\text{W}/\text{cm}^2$ .

Please consult Fig 2 for choosing the right probe in the appropriate spectral region.

When you plug a probe into a micro-processor controlled, (MP) series display unit, the microprocessor first reads all the relevant probe parameters from a memory circuit in the probe. These parameters include probe serial number, probe type, units of measurement, measuring range, overall calibration factor, range calibration factor for each probe amplification, probe offset and calibration date. Then it displays the measurements from the probe sensor in the selected units on the display unit's LCD display.

The microprocessor in the display unit also has full control over the gain switching circuits in the probe and will autorange the probe (if autoranging mode is selected) over its full measuring range.

The GOLDILUX series of ultraviolet probes measure

the power per unit area of the UV radiation falling on the detector. The probes have been specifically designed and calibrated for use with narrow-band UV sources (most UV lamps). In such UV sources most of the UV radiation is emitted in a narrow wavelength region around a dominant spectral line.

In the case of doing UV-A and UV-B measurements of wide-band UV sources (which emit UV radiation over a wide range of wavelengths, like for instance sunlight), this should only be done after having the probes re-calibrated for that specific type of wide-band source. UV-C probes should not be used for measurements on wide-band sources like sunlight at all, quite apart from the fact that there is no UV-C component in sunlight.

The different UV regions are internationally defined as follows:

UV-A: 315 - 400 nm, UV-B: 280 - 315 nm,  
UV-C: 100 - 280 nm.

#### **OPERATING INSTRUCTIONS**

1. Remove the readout unit and probe from their case and plug the probe cable into the probe socket on the display unit.

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in the probe and the last selected unit will thus be used automatically, selection is made, press the UNITS key again to go back to measuring mode. The unit selected continues on the display instrument, after switching off and on again.

4. The main probe parameters are displayed in a series of consecutive screens on the LCD display whenever the PROBE ID key is pressed.
5. In case of a dose measurement, press the NORMAL / DOSE key on the display unit and toggle through the available choices of integration time by using the UP and DOWN keys. Then press the START / STOP key on the display unit to start the dose integration over the selected time interval. The received dose and the elapsed time will be displayed simultaneously on the LCD display until the selected integration period has expired. Then both the timer and the dose reading will be frozen in the display until either the START/ STOP key is pressed to commence another dose measurement or the NORMAL / DOSE key is pressed (twice) to return to NORMAL measuring mode.

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In case the MANUAL option is chosen when selecting the integration time, the dose measurement will be started when the START / STOP key is pressed and stopped when it is pressed again.

6. By pressing the AUX key in normal measuring mode, the following additional instrument features can be selected by toggling through the various options with the UP and DOWN keys:

- a) Display of the ambient temperature in the display unit.
- b) Display of the display unit battery.
- c) RS232 communications (initiated by pressing the START button while in this selection). The RS232 protocol and the available commands are described in a later section.
- d) Switch from normal to economy mode (longer battery life, at the cost of slower operation and less flexibility). In economy mode all keyboard selections remain as set in normal operating mode and the unit no longer responds to any keyboard or RS232 input. In order to exit economy mode, the unit must be switched off.

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2. Mount or place the probe in the position in which the measurements are to be made. The probe has two 1/4" mounting holes, which allow it to be mounted either vertically or horizontally on e.g. a camera tripod.
3. Switch on the display unit and wait until it has read the probe parameters.
4. Check the probe zero with the cap firmly on the detector. If necessary, zero the probe by pressing the ZERO key on the keypad of the display unit.
5. Remove the protective cap from the probe detector being used and take readings.

All probes, photometric and radiometric, are interchangeable. This means they can be plugged into the display and the correct readout units will be selected by the microprocessor.

#### **OTHER KEYBOARD FUNCTIONS**

1. The display unit's ZERO key toggles the unit between two "zero" modes. In the "Abs" mode, A/D (analog to digital converter) zero readings
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- e) Display the raw analog-to-digital converter output (needed for display unit calibration).

#### **MAINTENANCE AND PRECAUTIONS**

When not in use, always put the protective cap on the probe detector and keep the instruments in their case.

Have a replacement battery ready when the "battery low" warning appears in the display ("BL" is displayed in the lower left part of the LCD display when the battery voltage reaches a level of about 8 V). The display unit stops measurements altogether once the battery voltage drops to about 7 V.

If necessary, clean the detector with a soft clean cloth or tissue moistened with alcohol. Dry and polish with a dry tissue.

#### **CALIBRATION**

- a) Plug the probe into the display unit.
- b) Consult the instruction manual for the GRP-1 unit for details of use.
- c) Expose the probe to a known power per unit area, emitted by a UV source radiating in the wavelength region to which the probe is sensitive and of the type with which the probe

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(with the A/D inputs shortened) are taken at regular intervals by the micro-processor and subtracted from subsequent probe readings. In the other ZERO mode, "Rel", the probe reading present when the key is pressed is subtracted from subsequent probe readings. Whenever "Abs" mode is entered or when the display unit is switched on, the "Rel" offset value is re-set to zero. A permanent "Rel" offset can be introduced by storing a non-zero value in the probe's PO ("probe offset") parameter (password required). The main use of the PO feature is to ensure a zero reading on the display when measuring with the cap on the detector.

2. If you would like to "freeze" the displayed reading momentarily, press the HOLD/RUN key on the display unit. Press the key again to see a continuously updated display of the readings.
3. If you would like to change the units of measurement (e.g., from lux to footcandle in the case of a light probe), press the UNITS key on the display unit and toggle through the available options using the UP and DOWN keys. Once your stored in non-volatile memory

is going to be used. Alternatively, produce a stable power per unit area with a suitable UV source of the correct type and measure it with a calibrated UV meter.

**NOTE :** *Calibrations should only be performed by trained metrologists in a recognized calibration laboratory.*

## SPECIFICATIONS

### Measurement parameter

Irradiance (power per unit area) or energy density (dose).

**Dynamic range :** 1: 2 000 000.  
**Readout :** 4½ digit LCD display autoranging over one decade.  
**Power source :** 9V type PP3 battery. Battery life approximately 200 hours for alkaline battery (without using an external probe).  
**Detector :** UV-enhanced silicon photodiode with filtering for either UV-A, UV-B or UV-C.

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the defective product returned to them. Replacement will be at no charge if deemed to be necessary. Shipping charges from the customer to an approved distributor shall be to the account of the customer and shipping charges from the approved distributor to the manufacturer shall be paid by the approved distributor. The manufacturer shall pay for the return of the replacement product to the approved distributor, who shall be responsible for the shipping charges to the customer.

### Warranty limitations

The manufacturer makes no other warranty, either expressed or implied, with respect to these products. The manufacturer specifically disclaims the implied warranties of merchantability and fitness for a particular purpose. Some states or provinces do not allow limitations on the duration of an implied warranty, therefore the above limitations or exclusion may not apply to you. However, an implied warranty of merchantability or fitness is limited to the one (1) year duration of this written warranty. This warranty gives you specific legal rights, and you may also have other rights which may vary from state to state, or province to province.

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**Spectral response :** As indicated in Fig. 1 (nominal values).  
**Accuracy :** Factory setting 5% (UV-A), 10% (UV-B), 15% UV-C. These figures are applicable for line sources centred at 365 nm (UV-A), 313 nm (UV-B) and 254 nm (UV-C). Otherwise, as stated on the calibration certificate by a recognized calibration laboratory.  
**Angular response :** As indicated in Fig. 1 (nominal values).  
**Dimensions :** 110 x 60 x 30 mm.  
**Mass :** 120 g (with cable).  
**Accessories :** Protective cap for detector, manual.  
**Re-calibration :** Return unit to a recognized calibration laboratory for re-calibration every 6-12 months (depending on total dose exposed to) or if calibration is in doubt for any reason.

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### Exclusive remedies

The remedies provided herein are the customer's sole and exclusive remedies. In no event shall the manufacturer be liable for any direct, indirect, special, incidental or consequential damages, whether based on contract, tort, or any other legal theory. Some states or provinces do not allow the exclusion or limitations of incidental or consequential damages, thus the above limitation or exclusion may not apply to you.

### Approved distributor's address

**CEATEC**  
 PO Box 211, Umzumbe, 4225  
 Tel: (039) 699-2293 Fax: (039) 699-3129  
 Attn: Chris Early  
 E-Mail: info@ceatek.co.za  
 Http://www.ceatek.co.za

**CT LABS**  
 PO Box 897, Stellenbosch, 7599  
 Tel: (021) 880-9915 Fax: (021) 880-1863  
 Attn: Hendrik Burger  
 E-Mail: cj@ctlab.co.za  
 Http://www.ctlab.co.za

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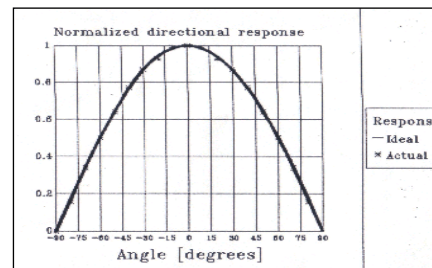


Fig. 1

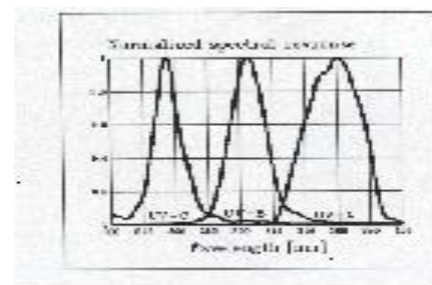


Fig. 2

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**ENVIROCON INSTRUMENTATION C.C.**  
 PO Box 2686, Northcliff, 2115, JHB  
 Tel: (011) 476-7323 Fax: (011) 476-5995  
 Attn: Howard Palmer, Dion van Riet, Brian Stowe  
 E-Mail: sales@envirocon.co.za Http://www.envirocon.co.za

**GfG (Pty) Ltd**  
 PO Box 2673, Randburg, 2125  
 Tel: (011) 955-4862 Fax: (011) 955-4741  
 Attn: Griselda, Casper van der Westhuizen  
 E-Mail: gfgsa@icon.co.za Http://www.gfg.co.za

**GAMMATEC ENGINEERING (Pty) Ltd**  
 PO Box 264786, Vereeniging, 1939  
 (016) 454-0260 Fax: (016) 423-3442  
 Attn: Quinton Bouwer, Nic Coetzer, Jenny  
 E-Mail: gammatec@mweb.co.za

**AMS HADEN** Suite 247 Pvt Bag X09, Weltevreden Park, 1714  
 Attn: Tony Gripping / Steve Bishop  
 T: (011) 475-2064 F: (011) 475-2062  
 E-Mail: haden@mweb.co.za

**MAGNITEC**  
 PO Box 27129, Benrose, 2011  
 Tel: (011) 618-2720/9 Fax: (011) 614-9603  
 Attn: Paul Nicolai  
 E-Mail: general@magnitec.co.za  
 Http://www.magnitec.co.za

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## Warranty Information

One (1) year limited warranty  
 The manufacturer warrants the light meters and probes against defects in materials and workmanship for a period of one (1) year from the date of original retail purchase (proof of purchase required). If an approved distributor receives notice of such defects during the warranty period, he will either, at its option, repair or replace products which prove to be defective and receive a replacement from the manufacturer.

**Exclusions:** The above warranty shall not apply to defects resulting from improper or inadequate maintenance by the customer, customer-supplied software or interfacing, unauthorized modifications or misuse, operation outside the environmental specifications for the product, improper site operation and maintenance, an accident or abuse.

**Obtaining warranty service:** To obtain warranty service, the products must be returned by the purchaser to an approved distributor. Repair or replacement of the instrument will be at the discretion of the technician at the manufacturers. They have to be notified of the warranty claim and

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**OPAQUE REFERENCE EQUIPMENT**  
 PO Box 25163, Edelweiss, 1577  
 3 Fulmar Rd, Daggafontein, Springs, 1559  
 T: (011) 363658 F: (011) 818 5870  
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